**SIT215 - Project**

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**Python Programs Execution**

# **Execution**

* In-order to execute this code, we need to make sure that we have the latest version of python installed on the computer.
* After that, go to the directory that the code files are saved in by typing the following command in command prompt: cd ‘file path’.
* Once in the directory, execute the code by typing the following command: python ‘file name’.py

A picture containing text

Description automatically generated

# **Outputs**

1. Following is the output of my Q-learning algorithm for the Taxi problem –

Chart, histogram

Description automatically generated

The graph here measures the total rewards received over 1000 episodes. As we can see with the help of q-learning policies, the rewards keep increasing with each episode.

1. Following is the output of Random Search algorithm for Cart-Pole problem –

Chart, histogram

Description automatically generated

Here, the graph shows the number of episodes it takes to finish 200 time-steps while searching for the best weight in-order to decrease the number of episodes required to reach 200 time-steps. This search algorithm searches for a random weight until it finds a weight that takes the least number of episodes.

1. Following is the output of Q-learning algorithm for Cart-Pole problem

Graphical user interface

Description automatically generated

This algorithm runs an instance of the Cart-Pole problem using q-learning policies and outputs the number of episodes it takes to solve the problem.

# **References for Codes**

* Aumjaud, P 2019, *PierreExeter/Q-learning-Taxi-V2*, GitHub, viewed 30 September 2020, <https://github.com/PierreExeter/Q-learning-Taxi-V2>.
* ‌Frans, K 2020, *kvfrans/openai-cartpole*, GitHub, viewed 30 September 2020, <https://github.com/kvfrans/openai-cartpole>.
* ‌Jain, S 2020, *sanjitjain2/q-learning-for-cartpole*, GitHub, viewed 30 September 2020, <https://github.com/sanjitjain2/q-learning-for-cartpole>.